REMARKS

This response is directed to the Office Action that was mailed out under the application Serial No. 09/677,636 on July 6, 2001. It is apparent from reading that Office Action, that it was intended for this case (09/677,637) and that the Office Action for this case also mailed on July 6, 2001, was intended for the '636 case.

The claims have been amended to replace the word "fixed" with --stationary--. This change has been made to better describe the portion of the flexible flap that remains at rest during an exhalation. The specification has been amended to refer to the stationary portion that is mentioned in the claims. Claims 37 and 63 have been canceled, and claims 65-66 have been added to this application. Thus, claims 33-36, 38-62, and 64-66 are now pending in this case.

Claims 33-64 of this application have been noted as conflicting with claims in other pending applications that applicants have before the United States Patent and Trademark Office. Applicants respectfully submit that the claims that are pending in this application do not conflict with any of the claims that are present in those applications. To the extent that there is a conflict, however, applicants will either cancel those claims or file a Terminal Disclaimer to overcome any double patenting rejection that may exist in this case when it is otherwise in condition for allowance.

The drawings have been objected to under 37 C.F.R. § 1.83(a). Rather than amend the drawings in this application, applicants have elected to cancel claims 37 and 63 from this case.

Claims 33, 39-41, 43-51, and 53-64 have been rejected under 35 U.S.C. § 103(a) as being unpatentable over UK Patent Application 2,072,516A to Simpson in view of U.S. Patent 4,981,134 to Courtney. Applicants respectfully submit that this rejection cannot be sustained for the following reasons.

Firstly, the combination of references do not teach or suggest a fluid impermeable ceiling that increases in height in the direction of the flexible flap from the stationary end to the free end. In making the obviousness rejection, the Examiner correctly indicated that Simpson fails to disclose a fluid impermeable ceiling that increases in height in this direction. But this missing teaching, however, has not been satisfied by the secondary reference to Courtney. Accordingly, applicants respectfully ask the Examiner to carefully reconsider this rejection.

Courtney shows a "grill-like spider of radial elements 19." It is apparent from a quick examination of Courtney's Figure 1, that air can easily pass through this structure. It therefore

cannot be construed as being fluid impermeable. The valve cover that is used in the present invention requires a *fluid impermeable ceiling* that increases in height in the direction of the flexible flap from the stationary portion to the free portion. While Courtney appears to disclose cross members 19, it does not teach or suggest anything that could reasonably be construed as a *fluid impermeable ceiling*. As the Examiner is aware, claims are to be given not simply their broadest construction but rather their broadest ***reasonable*** construction, interpretation, or meaning that is *consistent* with the specification.[1] In addition, applicants' claim requires both a ceiling and cross members. The cross members are disposed within the valve cover's opening. Courtney's "grill-like spider of radial elements 19" certainly cannot meet both limitations in applicants' claim. Such a reading would be entirely inconsistent with the construction of the claim. Although Courtney's radial elements 19 could certainly qualify as cross members, they in no way resemble a fluid-impermeable ceiling. Without any teaching or suggestion of this feature, applicants' invention therefore would not have been obvious to a person of ordinary skill under the terms of 35 U.S.C. § 103.

Secondly, even if we assume, however, that applicants claims could possibly be construed in such a way that Courtney's grill-like spider of radial elements 19 could qualify as both a fluid impermeable ceiling and cross members that are disposed within an opening of the valve cover, the combination of Simpson and Courtney still would not have taught or suggested the present invention because Courtney does not teach or suggest a fluid-impermeable ceiling *that increases in height in the direction of the flexible flap from the first end to the second end.*

The first end of applicants' flexible flap is associated with the stationary portion of the flap so as to remain at rest during an exhalation. The second end of applicants' flexible flap is associated with the free portion so as to be lifted away from the seal surface during an exhalation. The second or free end of applicant's flexible flap is also located below the first or stationary end when the filtering face mask is worn. This feature, in conjunction with the structure of the valve cover, allows exhaled air to be directed downward away from a wearer's eyewear to prevent fogging during an exhalation. Courtney does not teach a filtering face mask that has such a construction. Nor does it recognize the benefits that stem from this construction.

[1] *In re Sneed*, 710 F.2d 1544, 218 USPQ 385, 388 (Fed. Cir. 1983); *In re Reuter*, 651 F.2d 751, 210 USPQ 249, 253 (CCPA 1981).

In Courtney, the flexible flap is centrally mounted through use of a transversely projecting nub 61. A careful examination of the Courtney valve reveals that the "grill-like spider of radial elements 19" is *highest* where the flap is fixed centrally and *decreases* in height towards the free end of the flap. Therefore, even if we make the assumptions spelled out above to construe Courtney's collection of rib elements 19 as a "fluid impermeable ceiling", Courtney's "ceiling" does not increase in height in the direction that points towards the flap's free end. To the contrary, Courtney's valve has a structure that decreases in height in that direction. Thus, Courtney clearly teaches away from applicants' invention.

Thirdly, even if it were further assumed that Simpson and Courtney's combined disclosures taught all of the elements of the present invention and appreciated their advantages, despite Courtney's teachings (or lack thereof) to the contrary, applicants' invention still would not have been obvious to a person of ordinary skill because there is no teaching, suggestion, or motivation to combine the pertinent disclosures in each document.

Simpson provides no teaching or suggestion for using Courtney's grill-like spider of radial elements on the flapper-style valve 13 shown in Figure 2 of Simpson. Courtney's grill-like spider of radial elements 19 would more properly be used on Simpson's button-style valve 14 shown in Figure 3, if it was used on either of Simpson's valves. The button-style valve that Simpson discloses in Figure 3 is centrally mounted like the centrally-mounted exhaust valve 35 described in Courtney. The use of a flapper-style valve like the one shown in Figure 2 of Simpson would not be particularly suitable for use with Courtney's grill-like spider of radial elements. As indicated, the radial elements 19 described in Courtney decrease in height as they move outwardly from the center. This low profile at the end of Courtney's radial elements 19 could hamper opening of a flapper-style valve like the one shown in Figure 2 of Simpson.

Flapper-style valves have a stationary portion at an end or at an edge of the flap and have a free end or free edge segment that lifts from the valve seat. Unlike button style valves, the whole periphery of the flap is not free to be lifted from the valve seat. Flapper-style valves therefore have more distance from the stationary portion to the free portion, which creates a greater flap displacement during valve opening. Because of this greater displacement, the valve cover needs to provide adequate room to accommodate the longer distance that the free end of the flap can travel from its rest position on the valve seat. This is what applicants describe in their patent application. Courtney, however, teaches radial members that move downward in height. This teaching would

not have been particularly suitable for use with the flapper valve shown in FIG. 2 of the Simpson publication. And therefore a person of ordinary skill would not have been motivated to use Courtney's grill-like spider of radial elements on the Figure 2 Simpson valve.

For these reasons, applicant respectfully submits that the obviousness rejection, based on Simpson and Courtney, cannot be properly sustained under 35 U.S.C. § 103. Please favorably reconsider this rejection and allow this application at an early date.

Respectfully submitted,

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

Changes to Specification:

Page 7, line 22, between "exhalation." and the word "As" insert a new sentence:

When a wearer of a filtering face mask 10 exhales, exhaled air passes through the mask body 12 and exhalation valve 14. Comfort is best obtained when a high percentage of the exhaled air passes through exhalation valve 14 as opposed to the filter media of mask body 12. Exhaled air is expelled through valve 14 by having the exhaled air lift flexible flap 24 from valve seat 26. Flexible flap 24 is attached to valve seat 26 at a first portion 28 of flap 24, and the remaining circumferential edge of flexible flap 24 is free to be lifted from valve seat 26 during exhalation. The first portion (28) of the flexible flap (24) remains stationary during an exhalation and has a circumferential edge segment that may also remain stationary. As the term is used herein, "flexible" means the flap can deform or bend in the form of a self-supporting arc when secured at one end as a cantilever and viewed from a side elevation (see e.g., FIG. 5). A flap that is not self-supporting will tend to drape towards the ground at about 90 degrees from the horizontal.

Page 11, line 31, after "24" please insert --that is-- and at line 32, between "first" and "portion" insert --stationary--:

FIG. 5 illustrates a flexible flap 24 that is deformed by applying a uniform force to the flexible flap. Flexible flap 24 is secured at a first stationary portion 28 to a hold-down surface 46 and has for a second or free portion suspended therefrom as a cantilever beam. Surface 46 desirably is planar, and the flexible flap 24 is preferably secured to that planar surface along the whole width of portion 28. The uniform force includes a plurality of force vectors 47 of the same magnitude, each applied at a direction normal to the curvature of the flexible flap. The resulting deformation curve can be used to define the curvature of a valve seat's seal ridge 30 to provide a flexible flap that exerts a substantially uniform force upon the seal ridge.

Changes to Claims:

33. (amended) A filtering face mask that comprises:

(a) a mask body that is adapted to fit over the nose and mouth of a wearer; and

(b) an exhalation valve that is attached to the mask body, the exhalation valve comprising:

(1) a valve seat that comprises:

(i) a seal surface; and

(ii) an orifice that is circumscribed by the seal surface.

(2) a single flexible flap that has a [fixed] stationary portion and a free portion and first and second opposing ends, the first end of the single flexible flap being associated with the [fixed] stationary portion of the flap so as to remain at rest during an exhalation, and the second end being associated with the free portion of the flexible flap so as to be lifted away from the seal surface during an exhalation, the second end also being located below the first end when the filtering face mask is worn on a person, the flexible flap being positioned on the valve seat such that the flap is pressed towards the seal surface in an abutting relationship therewith when a fluid is not passing through the orifice; and

(3) a valve cover that is disposed over the valve seat and that comprises:

(i) an opening that is disposed directly in the path of fluid flow when the free portion of the flexible flap is lifted from the seal surface during an exhalation;

(ii) a fluid impermeable ceiling that increases in height in the direction of the flexible flap from the first end to the second end; and

(iii) cross members that are disposed within the opening of the valve cover.

55. (amended) The filtering face mask of claim 33, wherein the [fixed] stationary portion of the flexible flap [is] includes about 10 to 25 percent of the total circumferential edge of the flexible flap, with the remaining 75 to 90 percent being free to be lifted from the seal surface.